

SUMMARY

Background and Overview

This draft supplemental environmental impact statement (DSEIS) supplements the May 2005 Final Environmental Impact Statement¹ (FEIS) on the Fishery Management Plan (FMP) for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Region). Concurrent with the completion of the FEIS, the National Marine Fisheries Service (NMFS) informed the Western Pacific Fishery Management Council (also known as the Western Pacific Fishery Management Council or Council) that the Hawaii archipelagic bottomfish multi-species stock complex, which occurs in both federal and state jurisdictions throughout the archipelago, was determined to be experiencing overfishing. Bottomfish in the Hawaiian Archipelago are a collection, or complex, of deep-slope snappers, groupers, and jacks, however, the primary species of concern are the Deep 7 bottomfish species: onaga (*Etelis corsucans*), ehu (*Etelis carbunculus*), gindai (*Pristipomoides zonatus*), kalekale (*Pristipomoides sieboldii*), hapuupuu (*Epinephelus quernes*), opakapaka (*Pristipomoides filamentosus*), and lehi (*Aphareus rutilans*).

Hawaii's bottomfish fisheries are separated into two broad management sub-areas, the Main Hawaiian Islands (MHI) and the Northwestern Hawaiian Islands (NWHI) of which is separated into two smaller management zones; the Mau Zone and Hoomalu Zone. Nearly 80 percent of bottomfish habitat in the MHI are within the jurisdiction of the State of Hawaii (0 to 3 miles offshore), and historically, bottomfish fishing in the MHI has been managed by the state. The state's MHI management measures include bottomfish vessel registration, commercial fishing reporting, recreational catch limits for bottomfish two species (onaga, ehu), and 19 restricted bottomfish fishing areas. NMFS obtains commercial bottomfish fishing statistics from the State of Hawaii's Division of Aquatic Resources (HDAR).

The Magnuson–Stevens Fishery Conservation and Management Act (MSA) requires the Secretary of Commerce through NMFS to report annually to Congress on the status of fisheries within each regional fishery management council's geographical area of authority and identify those fisheries that are overfished, have overfishing occurring, or are approaching a condition of being overfished. The overfishing threshold levels for bottomfish management unit species (BMUS) stocks and populations is specified in Amendment 6² of the Bottomfish and Seamount Groundfish Fishery Management Plan (Bottomfish FMP). On May 27, 2005, the Regional Administrator for NMFS' Pacific Islands Region notified the Council that Hawaii's bottomfish multi-species stock complex is experiencing overfishing (within state and federal jurisdictions), with the MHI as the zone that contributes most of the problems in terms of both reduced biomass and overfishing (70 FR 34452, June 14, 2005). Pursuant to the MSA, the Council has one year from the May 27, 2005 notification to develop measures to end the overfishing through an amendment to the Bottomfish FMP (16 U.S.C. 18539(e)(3)). Because of the time it takes to obtain and process the fisheries data, stock assessments are usually conducted on annual fisheries data that is lagging behind the current calendar year. For example, the full set of 2003 bottomfish

¹ For a copy of the May 2005 FEIS contact William L. Robinson or Kitty M. Simonds, or visit www.wpcouncil.org for an electronic version.

² 68 FR 46112, August 5, 2003.

data was compiled and analyzed in 2005.

Hawaii's BMUS are evaluated under the MSA as a single archipelagic-wide multi-species stock complex. Management criteria, such as whether the stock complex is overfished or whether overfishing is occurring, apply to the stock complex rather than to the three sub-area management zones or to individual species either on an archipelagic basis or within the sub-areas. Under the MSA National Standard 1 guidelines, Hawaii's archipelagic bottomfish multi-species stock complex is not overfished (based on the biomass threshold using catch per unit effort [Catch-Per-Unit-Effort or CPUE] as a proxy). The current CPUE ratio is 0.82, above the threshold value of 0.7 established as the Minimum Stock Size Threshold in the Bottomfish FMP.

However, under the MSA National Standard 1 guidelines, a stock or population is subject to overfishing if the fishing mortality rate exceeds the maximum fishing mortality threshold (MFMT) for one year. Based on 2002 fishery catch and effort data analyzed by NMFS' Pacific Islands Fisheries Science Center (PIFSC), Appendix 5 to the 2003 Bottomfish and Seamount Groundfish Annual Report³ indicated that overfishing is occurring in the Hawaii Archipelago because the ratio of current fishing mortality (F) to estimated fishing mortality at maximum sustainable yield (F_{MSY}) exceeded the MFMT of 1.0. Hawaii's archipelagic bottomfish F ratio is obtained by adding the weighted F contributions of the three management zones (MHI, Mau and Hoomalu) by using effort, amount of bottomfish fishing gear used over a given unit of time, as a proxy for fishing mortality. The archipelagic values also include a weighted factor based on the amount of bottomfish habitat in each management zone. These habitat factors are 0.447, 0.124 and 0.429 for the MHI, Mau and Hoomalu Zones, respectively.

Using 2002 fishery data and the weighted factors for each zone, Appendix 5 to the bottomfish annual report stated that the archipelagic F ratio was between 1.14 and 1.35, above the overfishing threshold of 1.0. As reported in Appendix 5, the F ratio for the MHI was 1.86 to 2.33. The F ratios for the Mau and Hoomalu Zones were 1.19 and 0.37, respectively. Since the completion of Appendix 5 in April 2005, PIFSC has received the full set 2003 bottomfish fishery data from the State of Hawaii's Division of Aquatic Resources. Based on 2003 bottomfish fishery statistics and the weighted factors for each zone, the archipelagic F ratio is determined to be 1.13, above the overfishing threshold of 1.0. Individual F ratios for MHI, Mau and Hoomalu Zones are 1.88, 0.96 and 0.39, respectively (See Appendix 2 for more information).

The MHI F ratio greatly exceeds those of the NWHI zones and indicates that the overfishing occurs as a result of excessive fishing mortality (or effort) on the BMUS complex in the MHI. Considering the 2003 catch and effort data from each zone and their weighted factors, fishing effort in the MHI should be reduced by a minimum of 15 percent to lower the archipelagic F ratio from 1.13 percent down to a threshold value of 1.00 or less (Bottomfish Plan Team April 2005). The MHI is the zone that contributes most of the problems in terms of both reduced biomass and overfishing. Therefore, reducing fishing mortality in the MHI would be the most effective means to end the overfishing in the Hawaii Archipelago (70 FR 34452, June 14, 2005).

³ Appendix 5 to the Council's Bottomfish and Seamount Groundfish Annual Report, which also contains the status of bottomfish fisheries in the Western Pacific Region, can be obtained electronically at www.wpcouncil.org/Bottomfish/Documents/AnnualReports/2003/2003BAR-Appendix5-SatausofBott

Management of the bottomfish multi-species stock complex in the Hawaiian Archipelago is confounded by issues of single sector (commercial) representation in fisheries data in the MHI, the spatial distribution of fishing effort on the stocks, and the proxies used to measure fishing impacts. Fishing effort is heavily skewed towards the MHI, with nearly 3,600 bottomfish vessels registered in the MHI only nine bottomfish vessels operating in the NWHI. In the NWHI, the total commercial catch represents the sum total of all bottomfish fishing occurring there, while in the MHI, there is believed to be significant but unknown recreational catch which is not subject to mandatory reporting (HDAR Bottomfish Survey 2005). Only commercial catch and dealer reporting is required in the MHI.

In accordance with the MSA, federal fishery management actions (e.g. FMP amendments) are subject to the requirements of the National Environmental Policy Act (NEPA). Pursuant to NEPA regulations (40 CFR 1500 *et seq.*), this DSEIS was prepared because the May 27, 2005 overfishing determination added significant new circumstances and information relative to the management of Hawaii's archipelagic bottomfish multi-species stock complex. This DSEIS examines Hawaii's bottomfish fisheries, describes the alternatives being considered to end the overfishing, identifies the impacts associated with each alternative, and describes current data gaps and areas requiring further research and coordination with the State of Hawaii.

Description of the Alternatives Considered in this DSEIS

To meet the purpose and need of this proposed action (to end overfishing in the bottomfish complex in the Hawaiian Archipelago), the Council is considering several management measures or alternatives to address bottomfish fishing in the MHI, which as previously discussed, is the primary management area of concern. To determine the appropriate range of alternatives, the Council conferred with fisheries experts, Council staff, members of the fishing community, and members of the public through meetings and workshops held throughout Hawaii (see Section 1.7).

A range of alternatives was selected taking into account: (a) the best available scientific information on the bottomfish species' life history, habitat, and stock assessments; (b) the requirements of the MSA; and (c) the potential impacts to cultural, social, biological, enforcement, ecosystem, and economic factors. Under all the alternatives, HDAR's bottomfish management regime (HAR Chapter 13-4) may remain in place or could be changed by DLNR. The state's current bottomfish management regime includes: (i) 19 Bottomfish Restricted Fishing Areas (BRFAs) throughout the MHI, (ii) a recreational bag limit of 5 ehu and/or onaga per trip per person, (iii) required bottomfish vessel registration, and (iv) prohibited use of bottom longline, nets, traps, and trawls to take bottomfish. To end the bottomfish overfishing through reducing fishing mortality by 15 percent within the MHI, the Council is considering the following management alternatives, of which, all but Alternative 2a require close coordination with the State of Hawaii and parallel regulations.

Alternative 1: No Action

Alternative 1 is to take no federal action; that is, no federal management measures would be recommended by the Council at this time.

This alternative would also allow continued open access for entry into the MHI fishery, and commercial fishermen would continue to be required to submit catch reports. Recreational fishermen would continue not to be required to submit catch reports, and the recreational catch component would continue to be unknown.

Based on new mapping information of bottomfish habitat, HDAR is in the process of reviewing its bottomfish management regime, with a focus on the Bottomfish Restricted Fishing Areas (BRFAs). Under this alternative (no federal action), the state would likely continue to propose changes to its bottomfish management regime which includes: reducing the number of BRFAs from 19 to 12, modifying the BRFA locations and generally increasing their size, and standardizing BRFA boundaries to corresponding minutes of latitude and longitude. According to HDAR, the revised BRFAs include a greater amount of quality bottomfish habitat, with some are placed closer to shore to facilitate monitoring and enforcement. It is acknowledged by Hawaii's Division of Conservation and Enforcement (DOCARE) that enforcement of the existing BRFAs has not been effectively conducted due to lack of adequate funding, staff, and assets.

Alternative 2: Area Closures

Alternative 2 contains two variations, both of which would prohibit targeting, possession, landing, or selling any of the Deep 7 species from specified closed areas. Alternative 2a would close federal waters around Penguin Bank and Middle Bank to bottomfish fishing for the Deep 7 species. Alternative 2b would overlay federal closures in areas where the State of Hawaii is proposing closed areas known as that overlap BRFAs into the federal Exclusive Economic Zone (3 to 200 nm).

Alternative 2a: Closure of Penguin Bank and Middle Bank (Secondarily Preferred)

Under Alternative 2a, all recreational and commercial fishermen would be prohibited from targeting, possessing, landing, or selling any of the Deep 7 species (onaga, opakapaka, ehū, lehi, gindai, kalekale and hapuupuu) in or from federal waters around Penguin Bank and Middle Bank. All vessel operators (both commercial and recreational) targeting bottomfish in the MHI would be required to register their vessels on an annual basis and would be required to obtain permits as well as to complete and submit catch reports including their catches, fishing effort, and area fished. To facilitate recognition of bottomfish registered vessels from the air, each vessel would be required to be marked on an unobstructed upper surface with its registration number.

If the State of Hawaii does not commit to adopting seasonal closure regulations (Alternative 3) by April 15, 2006, the Council recommended the adoption of Alternative 2a. This alternative can be implemented by federal action as the vast majority of both Penguin and Middle Banks occur in federal waters (Figure 3). Together these areas represent between 16 percent and 20 percent of

MHI bottomfish landings (based on 1998 to 2004 and 1990 to 2004 data, respectively). The effectiveness of the area closures in reducing bottomfish fishing mortality would be monitored through recreational and commercial reporting as well as enforcement activities.

Alternative 2b: Overlay Federal Closures on Proposed HDAR's Bottomfish Restricted Fishing Areas

Alternative 2b would overlay federal closures on the State of Hawaii's proposed BRFA's in federal waters (3 to 200 nm offshore). HDAR has proposed to replace the current 19 BRFA's with 12 BRFA's. The proposed 12 BRFA's are based on bottom mapping and sonar data that provide a detailed view of bottomfish Essential Fish Habitat in the 100 to 400 m depth range. It is estimated by HDAR that the proposed BRFA's will reduce fishing (landings) by at least 17 percent (see Appendix 3).

According to HDAR, monitoring of the BRFA's will mostly include fishery-independent components (e.g. video cameras) and perhaps some limited extractive sampling. In order for area closures to be effective, it is important to have adequate enforcement. Problems with the current level of enforcement by DOCARE have been noted and the proposed BRFA's have been placed closer to shore, to the extent possible, and design them with straight-line boundaries, making it easier for both fishermen and enforcement officers to determine whether fishing takes place inside or outside the closed areas. Overlaying federal closures for those proposed BRFA's that extend into the EEZ will allow for enforcement by the U.S. Coast Guard and NMFS Office of Law Enforcement.

Alternative 3: Seasonal Closure (Primarily Preferred)

Under Alternative 3, an annual summer closure would be implemented from May 1 to August 31 of each year for the entire MHI bottomfish fishery (both commercial and recreational vessels). Targeting, possessing, landing, or selling MHI Deep 7 species would be prohibited during the closed season; however, the NWHI bottomfish fishery would remain open. All vessel operators (both commercial and recreational) targeting bottomfish in the MHI would be required to register their vessels on an annual basis and would be required to complete and submit reports of their catch, fishing effort, and area fished. In addition, each vessel would be required to be marked on an unobstructed upper surface with its registration number. To achieve the needs and objectives of this action (i.e. a 15 percent reduction in MHI fishing mortality), the State of Hawaii would need to establish a parallel summer closure for state waters. Recognizing that parallel state and federal seasonal closure regulations must be promulgated in order for a seasonal closure to be effective, the Council requested that the State of Hawaii notify the Council by April 15, 2006 of its commitment to adopt seasonal closure regulations. If the State of Hawaii does not commit to adopting seasonal closure regulations, the Council recommended the adoption of Alternative 2a (Closure of Middle and Penguin Banks). The effectiveness of the seasonal closure in reducing bottomfish fishing mortality would be monitored through recreational and commercial reporting as well as enforcement activities.

Alternative 4: Catch Limits

Alternative 4 includes two variations that would limit the commercial catch of MHI bottomfish. Alternative 4a would establish a fleet-wide total allowable catch (TAC) of bottomfish for all commercial fishing vessels in the MHI, while Alternative 4b would establish vessel-specific individual fishing quotas (IFQs) for Deep 7 bottomfish for all commercial fishing vessels in the MHI. Once either quota was reached, no targeting, possessing, landing or selling of MHI Deep 7 bottomfish (commercial or recreational) would be permitted. The NWHI bottomfish fishery would remain open.

Under both variations, all vessel operators (both commercial and recreational) targeting bottomfish in the MHI would be required to register their vessels on an annual basis and to obtain permits, as well as to complete and submit catch reports including their catches, fishing effort, and area fished. To facilitate recognition of bottomfish registered vessels from the air, each vessel would be required to be marked on an unobstructed upper surface with its registration number.

To achieve the needs and objectives of this action (i.e. a 15 percent in MHI fishing mortality), the State of Hawaii would need to establish a parallel requirement as both State and federal waters would have to be closed once the limit was reached. The effectiveness of the catch limits in reducing bottomfish fishing mortality would be monitored through recreational and commercial reporting as well as enforcement activities.

Alternative 4a: TAC

Under Alternative 4a, a TAC of 198,484 pounds of the Deep 7 species (all species combined), representing a 15 percent reduction from the 2003 fleet-wide MHI bottomfish catches of these species, would be applied to the entire MHI commercial bottomfish fishery. The bottomfish fishing year would start on October 1 and continue until the TAC was reached. Thereafter, no fishing for Deep 7 bottomfish (commercial or recreational) would be permitted in the MHI. The NWHI bottomfish fishery would remain open.

Alternative 4b: IFQs

Under Alternative 4b, IFQs would be established for each MHI commercial bottomfish fisherman, allowing each fisherman to catch 85 percent of their 2003 catch of the Deep 7 species, based on reported landings. The bottomfish fishing year would start on January 1. The number of participants would be limited to past participation in the fishery and quota amounts would be determined based on individual historical catches. Once a commercial fisherman had landed his respective IFQ, that person would not be permitted to fish for, possess, or sell any bottomfish until the following year. The recreational fishery would remain open.

Each MHI commercial bottomfish participant with an IFQ would be issued a set of bottomfish stamps, with each stamp representing a certain number of pounds of bottomfish and all the stamps totaling the fisherman's total IFQ. The fisherman would be required to submit a stamp to the dealer at the point of sale. If the fisherman sold fish in excess of the number of bottomfish

pounds for one stamp, he would be required to surrender a second stamp to the dealer. Once all the stamps were submitted the fisherman would be prohibited from fishing until the next open season.

Under this variation, fishermen would be required to continue reporting their catches and to stop fishing when their individual quota was reached. Fishery data would need to be analyzed in real time to ensure that fishermen did not exceed their quota and to penalize those that did.

IFQs could be implemented in a number of ways, two methods are outlined here:

1. Provide equal quotas (totaling 85 percent of the fleet-wide 2003 catch) to all historical participants. Under this alternative, historical "highliners" would get the same quota as part-time fishermen, and vice versa. Variations could provide equal quotas to a subset of all historical participants, such as those most active in recent years.
2. Provide individual quotas that are equal to 85 percent of each and every fisherman's historical catch. Under this alternative, fishermen's quotas would be relative to their individual historical catches. Variations could provide similar quotas to a subset of all historical participants, such as those most active in recent years.

Alternative 5: Combination Measures

Alternative 5 would mitigate potential impacts of the stand-alone alternatives above by combining modifications of those alternatives. Alternative 5 includes two variations. Alternative 5a would combine a seasonal bottomfish closure with bottomfish IFQs for certain commercial fishing vessels during the seasonal closure. Alternative 5b would combine seasonal closures with a partial closure of Penguin Bank.

Under both versions of Alternative 5, all vessel operators (both commercial and recreational) targeting bottomfish in the MHI would be required to register their vessels on an annual basis and would be required to complete and submit catch reports including their catches, fishing effort, and area fished.

Successful implementation and enforcement of Alternative 5 would be dependent upon coordination with the State of Hawaii as it would require parallel regulations for fishing limits and closures in both state and federal waters.

Under both versions of Alternative 5 enforcement would include shore-based monitoring of landings and sales. Imported bottomfish or bottomfish caught in the NWHI would still be available, and these would need to be certified and tracked to final point of sale. At-sea enforcement would be needed during closed seasons and to patrol the area closure in Alternative 5b. To facilitate recognition of bottomfish registered vessels from the air, each vessel would be required to be marked on an unobstructed upper surface with its registration number.

Alternative 5a: Seasonal Closure and IFQs

Under Alternative 5a, the MHI bottomfish fishery would be closed during an expanded seasonal closure from May 1 to September 30 of each year, except for a small number of full-time commercial bottomfish fishermen. The exempt fishermen would each receive IFQs for the Deep 7 species that they could use during the otherwise closed season (May to September). Once each exempted fisherman's quota was landed, he would be required to stop fishing until the next open season. The combined total of all IFQs would equal 23,946 pounds of the Deep 7 species (all species combined) as this is the amount that could be made available for harvest during the otherwise closed season and still maintain the overall annual reduction of 15 percent from the 2003 baseline for the entire MHI.

Each MHI commercial bottomfish fisherman exempted from the summer closure would be issued a set of bottomfish stamps, with each stamp representing a certain number of pounds of bottomfish and all the stamps totaling the vessel's IFQ for the otherwise closed season. The fisherman would be required to submit a stamp to the dealer at the point of sale. If the fisherman sold fish in excess of the number of bottomfish pounds for one stamp, he would be required to surrender a second stamp to the dealer. Once all the stamps were submitted the fisherman would be prohibited from targeting, possessing, landing or selling MHI Deep 7 bottomfish until the next open season.

As in Alternative 4, IFQs could be calculated and provided in equal amounts to all qualifying fishermen, or they could be calculated and provided such that each qualifying fisherman's quota was proportionate to his historical catch. However, in either case, the sum of the IFQs would not exceed the 23,946 pounds available.

Alternative 5b: Seasonal Closure and Area Closure

Alternative 5b would combine a seasonal closure from June 1 to August 31 of each year for the MHI with a year-round closure of the southwestern quarter of Penguin Bank. All MHI bottomfish fishermen would be prohibited from targeting, possessing landing or selling the Deep 7 species from the MHI during the summer closure. However, the year-round partial closure of Penguin Bank would enable the length of the summer closure to be reduced as compared to other alternatives. Based on historical MHI landings of deep-slope bottomfish, a summer closure from June through August would reduce landings by up to 11 percent as compared to the 2003 baseline. Based on 1998 to 2004 historical data indicating that federal waters around Penguin Bank are the source of 16 percent of MHI Deep 7 catches as compared to the 2003 baseline and lacking spatially detailed catch and effort data for this area, the closure of the southwestern quarter of Penguin Bank would be estimated to further reduce landings by an additional 4 percent. Thus the combination of the seasonal and area closures under Alternative 5b would be expected to achieve the 15 percent reduction target.

Summary of Environmental Consequences of the Alternatives Considered

For each alternative considered in detail, the potential direct and indirect impacts on each of the affected components of the human environment are described, as are the potential cumulative impacts.

Alternative 1: No Action

Alternative 1 is to take no federal action; that is, no further federal management measures would be recommended by the Council at this time. However under this and all other alternatives, HDAR's bottomfish management measures could remain in place or be changed by DLNR. Existing HDAR regulations include: bag limits for the recreational harvest of onaga and ehu (unless recreational fishing activities are closed as in some alternatives); requirements for anyone who intends to harvest any of HDAR's designated seven deep-slope bottomfish species (the Deep 7: onaga, ehu, opakapaka, gindai, lehi, kalekale, hapuupuu, and lehi) to register and mark their vessels with their registration number beginning with "BF"; and the existing 19 BRFA's which have been closed to bottomfish fishing since 1998. Under this and all other alternatives HDAR would continue to manage the BRFA's and could make changes to them. Uncertainty about the effectiveness of the State's existing BRFA's, about the final configuration of any new BRFA's (and related changes to existing area closures) and fishermen's responses to them, as well as uncertainty about trends in factors external to the fishery management regime (such as market demand and prices for fresh MHI bottomfish), hamper reliable estimations of future fishing activity. However it can be reasonably anticipated that catches of target species will be reduced if the proposed BRFA's close prime fishing areas. The distribution of impacts among fishery sectors, communities, and participants will largely be a function of where new area closures are located, and the proximity and viability of remaining open areas.

Absent any new federal or state actions, fishing activities and fishery conditions under Alternative 1 would continue as at present. If the trend of declining commercial fishing activity, apparent for the past 20 years, continues, overfishing may end by the observed reduction in effort which is used as a proxy for fishing mortality. There is, however, little flexibility under MSA National Standard 1 guidelines to preclude management measures to address an overfishing condition even though there is a historical trend in reduced fishing effort. Furthermore, fishing pressure (e.g. overfishing) may increase in future years due to markets or exogenous factors such as high fuel costs, which are believed to cause fishermen to switch from trolling to bottomfish fishing. If this continues, bottomfish stocks and catch rates may further decline and fishery participants in all sectors will see lower returns both in financial and non-market (e.g. angler satisfaction, protein sources, and social benefits) terms. If the overfishing of bottomfish in Hawaii continues, there is potential for experiencing an "overfished" state in the bottomfish fishery, which left unchecked could cause the fishery to collapse and require the implementation of a rebuilding plan. An overfished resource and subsequent collapsed fishery would likely result in significant negative impacts on Hawaii's fishing communities and participants.

Alternative 2: Area Closures

Under Alternative 2a, all recreational and commercial fishermen would be prohibited from targeting, possessing, landing, or selling any of the Deep 7 species (onaga, opakapaka, ehu, lehi,

gindai, kalekale and hapuupuu) in or from federal waters around Penguin Bank and Middle Bank. This alternative can be implemented by federal action as the vast majority of both Penguin and Middle Banks occur entirely in federal waters. Together these areas represent between 16 percent and 20 percent of MHI Deep 7 bottomfish landings as compared to the 2003 baseline (based on 1998 to 2004 and 1990 to 2004 data, respectively).

Deepwater bottomfish within the closed areas would be protected but fishing effort (and associated mortality) could be displaced to open areas, thus reducing the potential benefits of the closures. However subsequent mortality rates may be lower if open areas have lower catch rates than Penguin and Middle Banks. The extent of effort moving to open areas is unknown, but several key factors suggest a shifting of effort would likely occur. Oahu bottomfish landings represent approximately 30 percent of the commercial MHI landings, and harvests from Penguin Bank make up a significant proportion of those landings. Additionally, because MHI bottomfish tend to command higher aggregate prices than NWHI or imported bottomfish, a shifting of effort to other areas within the MHI is likely to occur. A year-round closure of Penguin and Middle Banks would likely have disproportionate effects on fishing communities and participants on Oahu and Kauai because of the proximity of the banks to these islands. Costly at sea enforcement and air surveillance would be necessary to enforce the closed areas.

Under Alternative 2b, all recreational and commercial fishermen would be prohibited from targeting, possessing, landing, or selling any of the Deep 7 species in or from federal waters of the state's BRFA's. According to HDAR, the proposed BRFA's will reduce fishing effort by at least 15 percent. Deepwater bottomfish within the closed areas would be protected but fishing effort (and associated mortality) could be displaced to open areas, thus reducing the potential benefits of the closures. The assumptions and analysis of HDAR's proposed revisions to the BRFA's, is complex and it is difficult to predict the associated impacts. Although area closures are recognized as a valid management tool for some fisheries, there is more uncertainty in predicting the impacts associated with the proposed BRFA revisions when compared to the other alternatives. For example, the proposed closed areas will likely increase bottomfish biomass within the closed areas; however, the spillover effect to adjacent areas is unknown. The distribution of impacts among fishery sectors, communities, and participants will largely be a function of where new area closures are located, and the proximity and viability of remaining open areas. The proposed closed areas would require costly at sea and air surveillance enforcement and according to NMFS OLE, closed areas interspersed with open areas are difficult to enforce. The USCG and NMFS OLE have indicated that they lack appropriate resources to adequately enforce the proposed BRFA's (131st Council Meeting, March 13 to 16, 2006),

Alternative 3: Seasonal Closure

Under Alternative 3, an annual summer closure would be implemented during May to August of each year for the entire MHI bottomfish fishery (both commercial and recreational vessels). To achieve the needs and objectives of this action (i.e. a 15 percent in the fishing mortality of MHI Deep 7 species), the State of Hawaii would need to establish a parallel summer closure for state waters.

Based on historical MHI landings, the May to August closure would be expected to reduce MHI landings by up to 17 percent as compared to the 2003 baseline. Peak spawning of deep-water bottomfish is believed to occur during the summer months, thus spawning bottomfish would be protected throughout the MHI during the closed season. Although fishing effort could shift to open periods, the extent of effort shifting to open periods is not expected to be significant as there would be a reduced number of calendar days to fish, in combination with the sensitivity of the bottomfish fishery to adverse weather conditions. Historically, the highest levels of bottomfish fishing effort occur in the winter months when there is a greater demand for bottomfish during the holiday season, as well as shift in weather patterns that result in calmer ocean conditions that are more conducive to bottomfish fishing. In addition, the closure would occur during the time when bottomfish activity has been historically low as fishermen switch to other fisheries. Both the pelagic troll (e.g. yellowfin) and the hook-and-line mackerel (akule and opelu) fisheries are at their peak during the summer period and therefore represent various recreational and commercial fishing opportunities during the bottomfish closed season.

It's believed the largest impact of a seasonal closure would be on the full-time commercial bottomfish sector, which whom depend on harvesting bottomfish for their livelihood. Impacts on fishing communities and participants would generally be evenly distributed except for some number of participants from each community who prefer year-round bottomfish fishing to other types of fishing or who prefer summer bottomfish fishing to other times of year.

Enforcement of a seasonal closure will occur mostly shore-side and at fish markets. At sea enforcement or air surveillance would still be conducted, however, at levels lower than what is required for year around area closures.

Alternative 4: Catch Limits

Both variations of Alternative 4 would provide direct control of fishing mortality and would (with parallel State regulations) be expected to achieve the target 15 percent reduction in catches of MHI Deep 7 species. However concerns have been raised regarding the determination of appropriate allowable harvest levels on an ongoing annual basis as to date not even one comprehensive stock assessment has been completed for this fishery. PIFSC has recently initiated a process to complete a comprehensive stock assessment, however the date of completion is unknown, and further the assessment model would unlikely be able to predict allowable harvest levels on an annual basis. There is also a paucity of fishery independent data, as well as difficulty in adjusting available CPUE data as highliners leave the fishery. Incorporating the existence of area closures such as the State's BRFA's has also proven problematic as the BRFA's are generally designed to close the most productive fishing areas, thus reducing available CPUE in remaining open areas. Additionally there is a lack of fishery independent data, a lack of recreational data, and difficulty in adjusting available CPUE data as highliners leave the fishery. These factors may make the use of a quota-based management program difficult.

High-grading would also be a concern under both versions of Alternative 4. High-grading to maximize value can occur within species (e.g. discarding small fish in favor of larger fish) or between species (e.g. discarding low-value species in favor of higher-value species). Deep-slope

bottomfish generally have a high mortality rate resulting from embolism as they are brought to the surface. If, and to what extent, high-grading occurs, additional bottomfish mortality may occur. A quota-based program may also lead fishery participants to make sure that they achieve quotas out of fear that future quotas (or their share of them) may otherwise be reduced. This can result in increased impacts on target species as compared to other management approaches.

The use of a commercial fleet-wide TAC under Alternative 4a would be anticipated to result in a bunching of fishing effort at the beginning of each fishing year (October 1) as fishery participants would be aware that once the TAC was reached the fishery would be closed to all sectors. Given that the majority of commercial landings are already made during the winter season this is not likely to radically change these operations, however it may lead to market “floods” which temporarily reduce fresh fish prices and adversely impact commercial fishermen. Once the TAC was reached, this alternative would lead to an increased reliance on NWHI or imported bottomfish. Pending the designation of the NWHI National Marine Sanctuary, a continued NWHI bottomfish fishery is likely to be subject to reduced catch limits, or completely phase-out over a period of time. An increase reliance on imported bottomfish would be anticipated to have negative impacts on the entire commercial fishery sector as market channels for fresh MHI bottomfish would be lost and have to be regained each year, a task that has historically proven to be difficult in many fisheries and industries.

The impacts of Alternative 4b on the commercial fishery sector would vary depending on how the IFQs were implemented. If equal quotas (totaling 85 percent of the fleet-wide 2003 catch) were provided to each participant, highliners would get the same quota as part-time fishermen, and vice versa. This would leave some without enough quota, while others would have unused quota. Without a method to transfer (trade) quota between fishermen, this would have disproportionately adverse impacts on the highliners. If individual quotas (equal to 85 percent of each fisherman’s individual historical catch) were provided, all commercial participants would be anticipated to experience proportionately equally adverse impacts, and it is likely that more of the total quota would be used even if there were no method to transfer quota between fishermen. If individual quotas were provided to a subset of all historical participants, such as those most active in recent years, the individual quotas would not change, but some historical participants would not have any quota. The recreational (including subsistence) fishery sector would not be issued an IFQ but would continue to be subjected to the State’s recreational bag limits.

Because this alternative may also lead to an increased reliance on imported bottomfish as the commercial IFQs were reached, it would be anticipated to have negative impacts on the entire commercial fishery sector as market channels for fresh MHI bottomfish would again be lost and have to be regained each year.

Alternative 5: Combination Measures

Both variations of Alternative 5 (with parallel State regulations) would be expected to meet the 15 percent target reduction in fishing mortality to MHI Deep 7 species. Alternative 5a’s expanded (May–September) summer closure would impact all fishery sectors, communities and participants; however, this is normally be a period of lower bottomfish fishing activity because of the increased availability of pelagic fish, so this impact may be relatively low. The provision

of equal IFQs for use by a subset of commercial fishermen during the otherwise closed season will offset the impacts on this group. However, the allocation of equal quotas to each qualifying participant would likely leave some without enough quota, while others could have unused quota. Without a method to transfer (trade) quota between fishermen, this would have adverse impacts on the qualifying highliners.

As compared with alternatives that would result in time periods during which no MHI bottomfish were landed (resulting from seasonal closures or TACs or universal IFQs), Alternative 5a would be expected to have a strongly positive impact on the entire commercial fishery sector. It would provide a continuous supply of fresh MHI bottomfish to local markets, thus maintaining open market channels that would otherwise be expected to be filled by increased imports during the closed season. Experience has shown that if imports come to dominate market channels, it can be difficult for local producers to regain their market share as wholesalers and retailers can be reluctant to forgo their now-established supply chains.

Alternative 5b would combine a seasonal closure June to August of each year for the MHI with a year-round partial closure of Penguin Bank. Based on historical MHI landings of deep-slope bottomfish, a summer closure from June through August would reduce MHI Deep 7 landings by up to 11 percent as compared to the 2003 baseline. Data from 1998 to 2004 indicate that federal waters around Penguin Bank are the source of 16 percent of MHI Deep 7 catches as compared to the 2003 baseline. The closure of the southwestern quarter of Penguin Bank would be expected to further reduce landings by an additional 4 percent. As in Alternative 5a, deep-slope bottomfish throughout the MHI would be protected during the closed season. Fishing effort could shift to open periods, potentially reducing the benefits of the closures. In addition to the benefits of the seasonal closure, Alternative 5b would further protect target species within the closed area on the southwestern quarter of Penguin Bank.

Economic Impacts from the Alternatives

The economic effects of ending overfishing in the MHI bottomfish fishery depends largely on how fishermen and the seafood market react to the measures. For the fishermen, it is expected that they will adjust to the extent possible by shifting their effort to other time-area strata. For the market, the same applies in terms of finding substitutes for decreases in their supply of MHI bottomfish. Their primary alternatives are as follows: NWHI bottomfish, imported bottomfish, and other species (non-bottomfish). The management objective to reduce bottomfish catch in the MHI by 15 percent translates to a reduction of roughly 35,000 pounds of the deep snapper/grouper complex or \$110,000 ex-vessel revenues. The aggregate impact on Hawaii's economy would be small. Using an input/output approach, as a rough order of magnitude, the total economic impact would be \$300,000 in business sales with a loss of \$120,000 in income.

Fishermen would have the ability to offset some of their lost revenue by substituting different target species and adjusting their fishing patterns accordingly. Obviously, the distribution of this cost across currently active (or potentially newly active) participants would differ by their current levels of fishing effort, but if there are roughly 300 active commercial bottomfish fishermen in the MHI, the average impact is minimal. However, the individual impact may be significant for the relatively few full-time bottomfish fishermen. There is a consumer price

element in which any decrease in the supply of bottomfish would be expected to increase prices by a certain percentage.

Finally, the Hawaii bottomfish fishery is also important culturally to Hawaii's fishing communities, a value not entirely reflected by the seafood market. Again, NWHI bottomfish would be considered in many cases a close substitute, but substituting different snapper species from imports would not be so close a cultural substitute. More research would be required on the implications of this effect on Hawaii's communities.

Selection of a Preferred Alternative

Based on public comments received and recommendations provided by the Council's advisory panels and its Science and Statistical Committee, the Council at its 131st meeting selected Alternative 3 (Seasonal Closure) as the measure to end the bottomfish overfishing problem within the MHI. Recognizing that parallel state and federal seasonal closure regulations must be promulgated in order for a seasonal closure to be effective, the Council requested that the State of Hawaii notify the Council by April 15, 2006 of its commitment to adopt seasonal closure regulations. If the State of Hawaii does not commit to adopting seasonal closure regulations, the Council recommended the adoption of Alternative 2a (Closure of Middle and Penguin Banks), which is the only alternative that involves only federal jurisdiction that could be unilaterally approved and implemented by NMFS acting on behalf of the Secretary of Commerce. The Council also recommended at its 131st meeting, that a working group be established composed of staff from the Council, State, and Federal agencies to develop a comprehensive research, monitoring, and enforcement program to evaluate the effectiveness of the State's existing and proposed BRFA's.

Table 1: Summary Impact Comparisons of the Alternatives.

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Target Species	<p>(-) Continued overfishing.</p> <p>(-) Does not meet MSA requirements.</p> <p>(?) The impact of a revised State of Hawaii bottomfish management regime.</p> <p>(-) Recreational fishermen would continue not to be required to submit catch reports, and the recreational catch component would continue to be unknown</p>	<p>2a: (+) Anticipated to reduce landings by up to 20 percent based on historical catch.</p> <p>2b: (+) Anticipated to reduce landings by up to 17 percent based on 2004 catch.</p> <p>(+) Closed areas may help replenish stocks in adjacent habitat (i.e. spillover).</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements.</p> <p>(-) Fishing effort may increase in open areas reducing benefits of closures & depressed CPUE in those areas fished.</p>	<p>(+) Anticipated to reduce landings by up to 17 percent based on historical catch.</p> <p>(+) May protect bottomfish summer spawning aggregations & reduce mortality on spawning fish increasing biomass over time.</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements.</p> <p>(-) Fishing effort may increase during open periods reducing overall benefit.</p>	<p>(+) Anticipated to reduce landings by up to 15 percent based on historical catch.</p> <p>(+) Sets hard limits on amount of fish caught.</p> <p>(+) Recreational and commercial catch data collection would be improved with new, timely reporting requirements.</p> <p>(-) Lack of robust stock assessments may lead to errors in setting harvest limits.</p> <p>(-) Poor, missing data on catch especially in recreational fishery may lead to errors in setting harvest limits.</p> <p>(-) May lead to high-grading and thus no net decrease in mortality.</p>	<p>(+) Anticipated reduce landings by up to 15 percent based on historical catch.</p> <p>(+) Both options would reduce fishing mortality.</p> <p>(+) Both options would reduce bottomfish landings during closed season.</p> <p>(+) Recreational catch data would be improved.</p> <p>5a: (+) May protect bottomfish spawning aggregations & reduce mortality on spawning fish, increasing biomass over time.</p> <p>5a: (-) Lack of robust stock assessments may lead to errors in setting harvest limits.</p> <p>5b: (+) Closed areas may help replenish stocks in adjacent habitat (i.e. spillover).</p> <p>5b: (-) Fishing effort may increase in open areas reducing benefits of closures.</p>

Legend: (+) positive, (-) negative, (?) unknown, (n) neutral.

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Nontarget Species and Bycatch	<p>(n/+) If the decline in fishing effort continues, there may be a decline in catch of nontarget spp.</p> <p>(n) Bycatch data in the MHI has only recently been reported, but is estimated to be minimal, and disproportionately limited to a few number of species which likely survive when discarded.</p>	<p>(+) Catch of nontarget spp. would be eliminated in closed areas.</p> <p>(n/-) Increased effort in open areas may locally increase catch of nontarget species and bycatch in those areas.</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements.</p>	<p>(n/-) Increased effort during open period may lead to increased catches of non-target species and bycatch, especially for species more abundant during the open season.</p> <p>(+) The minimal bycatch levels would be eliminated during closed period.</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements</p>	<p>(-) If annual quota is met, effort to catch normally non-target species may increase.</p> <p>(n) Bycatch in deep handline fishery is minimal so reduction in bycatch would be minimal.</p> <p>(-) High-grading may increase bycatch, including that of target species.</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements</p>	<p>(n) Bycatch is minimal so reduction in bycatch would be minimal.</p> <p>5a: (-) Highgrading may increase bycatch, including that of target species.</p> <p>(+) Recreational catch data collection would be improved with new reporting requirements</p>
Protected Species	<p>(n) Rare interactions between bottomfish fishers and protected species. A decline in bottomfish fishing, it is expected that there will be a proportional reduction in the potential of an interaction.</p>	<p>(+) Potential minor benefits in preventing possible interactions in closed areas.</p> <p>(n) Impact of potential increased effort in open fishing areas likely negligible as interactions are rare.</p>	<p>(+) The possibility of protected species interactions would be eliminated during closed period.</p>	<p>(n/+) An enforced reduction in landings and possible shortened season may result in a proportional reduction of potential interactions.</p>	<p>(+) Possible minor benefits in preventing potential interactions.</p>

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
EFH, Biodiversity, & Ecosystem	(n) Bottomfish fishing has a negligible impact on habitat due to gear and methods used, nor significant adverse effects on biodiversity or ecosystems.	(n) Bottomfish fishing has a negligible impact on habitat due to gear and methods used, nor significant adverse effects on biodiversity or ecosystems. (n/+) Negligible or slightly positive effects by less fishing effort in closed areas. (?/-) Potential for localized negative effects if bottomfish fishing effort is too highly concentrated in open areas with suitable habitat.	(n) Bottomfish fishing has a negligible impact on habitat due to gear and methods used, nor significant adverse effects on biodiversity or ecosystems. (+) Potential negative impacts on EFH, biodiversity, and ecosystems would be eliminated during closure period. (?/n) The impacts of a potential increased level of effort during open season are unknown, but likely minimal.	(n) Bottomfish fishing has a negligible impact on habitat due to gear and methods used, nor significant adverse effects on biodiversity or ecosystems. (+/n) No likely effect on EFH or slight positive effect by less fishing presence once the TAC is reached.	(n) Bottomfish fishing has a negligible impact on habitat due to gear and methods used, nor significant adverse effects on biodiversity or ecosystems. (+/n) No likely effect on EFH or slight positive effect by less fishing presence once an IFQ is reached and due to no bottomfish fishing during closure period.

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Fishing Sectors	<p>(-) Continued overfishing would lead to decreased landings.</p>	<p>2a: (+) Closure of Penguin Bank, the most productive bottomfish area in the MHI, may result in failure of full-time bottomfish fishing and multi-fishery operations.</p> <p>2a: (-) Impact to all sectors will not be distributed evenly throughout the islands; greatest impact will be to Oahu and Kauai based fishermen.</p> <p>2b: (-) Proposed closures may impact small boat recreational and commercial fishermen throughout the state if force to travel farther to bottomfish.</p>	<p>(+) Impacts distributed evenly throughout all fishing sectors.</p> <p>(+) Pelagic troll or other fisheries are viable alternatives for MHI bottomfish fishers during closed season.</p> <p>(n) Historically there are higher monthly bottomfish landings during the proposed open season.</p>	<p>(+) Commercial bottomfish fishers who have correctly reported their catch will lose less than those who have not reported or have underreported their catches.</p> <p>(-) Fishermen with poorly documented catch records may be squeezed out of the fishery.</p> <p>(-) May restrict new entry into the fishery.</p>	<p>5a: (+) Commercial bottomfish fishers who have correctly reported their catch will lose less than those who have not reported or have under-reported.</p> <p>5a: (+)(+) Pelagic troll or other fisheries are viable alternatives for MHI bottomfish fishers during closed season.</p> <p>5a: (-) Fishermen with poorly documented catch records may be squeezed out of the fishery.</p> <p>5a: (-) May prevent new entry into the fishery.</p> <p>5b: (+) Impacts distributed evenly throughout fishing sectors, but Oahu fishing sectors likely more affected.</p> <p>(+) Pelagic troll fishery is a viable alternative for MHI bottomfish fishers.</p>

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Fishing Communities	(-) Continued overfishing may reduce the social and economic benefits of maintained fishing opportunities.	2a: (-) Disproportionate localized economic and social impacts to Oahu and Kauai fishing communities. 2b: (-) Potential negative impact on communities located near proposed area closures.	(+) Impacts distributed evenly across the state. (+) The fishery would not be closed during holiday season when red bottomfish are most desired by local communities. (-) Marginal impact if seasonal closure is implemented during historically low periods of fishing effort and landings.	4a: (+) A TAC would likely affect all fishing communities equally. 4b: (+) Distribution of IFQs recognizes past participation and experience in fishery. 4b: (-) For those fishing communities whose commercial fishermen have poorly documented catch records may be squeezed out of the fishery.	5a: (+) Distribution of IFQs recognizes past participation and experience in fishery. 5a: (-) For those fishing communities whose commercial fishermen have poorly documented catch records may be squeezed out of the fishery 5b: (+) Seasonal closure evenly distributes impacts across the state 5b: (-) Partial closure of Penguin Bank may result in disproportionate localized economic and social impacts to the Oahu fishing community.

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Native Hawaiian Communities	(-) Continued overfishing would lead to decrease in CPUE and available bottomfish.	(-) Any government curtailment or reduction of access rights & cultural practices may be seen as a permanent loss of culture, especially for those Native Hawaiians. 2b: (-) Potential negative impact on Native Hawaiian communities located near proposed area closures.	(+) Impacts distributed evenly across state. (n/-) Marginal impact if seasonal closure is implemented during historically low periods of fishing effort. (-/n) Any government curtailment or reduction of access rights & cultural practices may be seen as a permanent loss of culture; however, seasonal closures were historically used by Native Hawaiians to manage marine resources.	(-) Any government curtailment or reduction of access rights & cultural practices may be seen as a permanent loss of culture.	(-) Any government curtailment or reduction of access rights & cultural practices may be seen as a permanent loss of culture.

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Administration and Enforcement	<p>(+) No impacts or additional costs.</p> <p>(n) Continue to monitor the status of the fishery.</p> <p>(-) Would continue to have limited data, especially for recreation fishing effort & landings hindering future management efforts.</p>	<p>2a: (+) Penguin Bank is a large area close to Oahu that will make it easier to enforce and monitor.</p> <p>2a: (-) Middle Bank is farther from Oahu and would likely be monitored via air surveillance (costly) than by boat by USCG.</p> <p>(-) Requires a research monitoring program to be implemented to measure effectiveness.</p> <p>2b: (n,-) May allow the force of federal jurisdiction to enhance state jurisdiction in the MHI, but multiple relatively small closed areas with open areas in between are difficult to enforce.</p> <p>2b: (-) Historically, DOCARE has been under-funded and has lacked the ability to adequately enforce the existing BRFA's. Burdening the USCG with enforcing the proposed closed areas could negatively affect them as they have other important missions (e.g. Homeland security).</p>	<p>(n/-) Requires enhanced state and federal coordination. Similar rules would need to be established by both state and federal agencies.</p> <p>(-) Certification of imported and NWHI bottomfish will be needed.</p> <p>(-) Administrative and enforcement costs will increase over current levels.</p> <p>(+) At-sea and air enforcement, which is costly, would be minimal although necessary to monitor compliance; Bulk of monitoring can be through dockside enforcement or monitoring of markets and dealers.</p> <p>(+) Existing state dealer reporting program could be used to check sales and landings.</p>	<p>4a: (-) Closely monitoring of catch reports may require more resources.</p> <p>4a: (+) Costly at-sea and air enforcement not required unless quota is met.</p> <p>4a: (-) All bottomfish sold would have to be tracked to point of sale.</p> <p>4b: (-) Implementing and monitoring IFQs would likely require additional resources and may be burdensome to administer.</p> <p>4b: (-) Enforcement would be difficult catch fishermen who exceed their IFQ.</p>	<p>5a: (-) Closely monitoring of catch reports may require more resources.</p> <p>5a: (-) Enforcement would be difficult catch fishermen who exceed their IFQ.</p> <p>5b: (+) Penguin Bank is close to Oahu allowing it easier to enforce and monitor.</p> <p>5b: (-) Enforcement of closed areas requires at-sea and air enforcement, which is costly.</p>

	Alternative 1: No Action	Alternative 2: Area Closures	Alternative 3: Seasonal Closure	Alternative 4: Catch Quotas	Alternative 5: Combination Measures
Regional Economy	<p>(-/n) Continued overfishing may eventually lead to a collapse of the bottomfish fishery in the MHI.</p>	<p>2a: (-/n) Closure of Penguin and Middle Banks may slightly affect the impact Oahu and Kauai fishermen's contribution to the regional economy.</p> <p>2a: (-) Total Penguin Bank closure would negatively impact Oahu bottomfish fishermen's ability to supply local high quality sashimi markets.</p> <p>2b: (-) Statewide closures may have slight effects on economy statewide.</p> <p>(-) May encourage importation of lesser quality products that will further erode the market for local bottomfish in local markets</p> <p>(-) May encourage increased importation of similar products that may facilitate the supplanting of the traditionally high-priced local bottomfish species.</p>	<p>(+) Seasonal closure would be during period of historically slow bottomfish fishing activity.</p> <p>(+) Winter months and important holiday seasons would remain open when red fish is most desired by local communities.</p> <p>(-) MHI bottomfish product would be eliminated from market during closure period.</p> <p>(-) MHI Bottomfish fishermen may lose foothold due to higher levels of imports.</p>	<p>(-) With reduced bottomfish landings there will be a loss of revenue.</p> <p>(-) If quotas are met, imports of bottomfish are likely to increase above the current level of an average 750,000 pounds.</p>	<p>5a: (+) IFQs for small proportion of commercial fishermen would provide markets with MHI bottomfish during closed season; less reliance on imports during closed season.</p> <p>5b: (n/-) Partial closure of Penguin Bank may slightly impact Oahu bottomfish fishermen's' contribution the regional economy.</p>